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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/606,721

06/26/2003

Ian Robinson

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TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P.  
1300 EAST NINTH STREET, SUITE 1700  
CLEVEVLAND, OH 44114

EXAMINER

BURD, KEVIN MICHAEL

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

05/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/606,721	<b>Applicant(s)</b> ROBINSON ET AL.	
	<b>Examiner</b> Kevin M. Burd	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-6,9-17 and 19-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,9-17,19-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. This office action, in response to the amendment filed 3/8/2007, is a non-final office action.

***Response to Arguments***

2. Applicant's arguments with respect to the rejections of claims 1 and 3-6 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection stated below. Additional clarification of the rejection of claims 12, 13, 20 and 21 is stated below. The rejections of claims 14-17 and 19 are withdrawn in view of the amendment.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 14-17, 19 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Regarding claims 14-17 and 19, Figures 5 and 8 of the instant application disclose the modified input signal and the instruction signal being combined prior to transmission. Therefore the signals are not transmitted in a parallel relationship.

Regarding claim 26, the specification does not disclose transmitting the peak reduced input signal separately from the instruction signal (figure 8, block 220).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Leva et al (US 2002/0061068).

Regarding claims 9-11, Leva discloses a communication device that modifies an input signal to reduce peak signals associated with the input signal. This is shown in figures 1-3 and paragraph 0011. A power amplifier will amplify the compensated signal (paragraph 0007) and the receiver is able to restore the original signal (paragraph 0011). The received signal is associated with a scale factor of one.

5. Claims 12, 13, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Muller et al "OFDM with Reduced Peak-to-Average Power Ratio by

Multiple Signal Representation", vol. 52, no. 1/2, 2/1997, XP 000991143. Ghanadan et al (US 6,294,956) provides information regarding the term replica.

Regarding claims 12, 13, 20 and 21, Muller discloses a method and apparatus for splitting an input signal into a plurality of replica signals (figure 5). The replica signals are scaled to reduce the peak values (figure 5 and page 63). The signals are combined in the adder of figure 5. The combined signal is amplified by a power amplifier (page 59). Muller does not disclose what constitutes a replica signal. Muller discloses the carriers are divided into subcarriers. Ghanadan discloses an amplification system shown in figure 17. Ghanadan discloses the original signal S is transformed into signals that are more power efficient by selectively shaping different portions of the signal S (column 14, lines 26-32). This will produce signals with reduced PAR. As such, a signal with different carriers or tones can be selectively separated (column 14, lines 32-36). Figure 17 shows a splitter 138 that provides replicas of the signal to two orthogonal filters 134 and 136. The filters 134 and 136 shape the frequency content of the different versions of the signal to improve power efficiency of the transformed signals X1 and X2 compared to the power efficiency of the original signal (column 14, lines 39-45). The context of Ghanadan's "replica" term is consistent with Muller's signal shown in figure 5.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-6 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leva et al (US 2002/0061068) in view of Tong et al (US 2003/0099302).

Regarding claim 1, Leva discloses a communication device that modifies an input signal to reduce peak signals associated with the input signal. This is shown in figures 1-3 and paragraph 0011. A power amplifier will amplify the compensated signal (paragraph 0007) and the receiver is able to restore the original signal (paragraph 0011). Leva does not disclose shaping a modulation constellation of the input signal to reduce the peak values associated with the input signal. Tong discloses constellation shaping as shown in figure 5. Constellation shaping is a method of reducing the power required to transmit data relative to the power required for an unshaped constellation while keeping the minimum distance between constellation points the same (paragraphs 0054-0057). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the shaping components of Tong into the device of Leva to further reduce the power of the system.

Regarding claims 3, 4 and 25, figures 1-3 disclose the combining of an instruction signal with the input signal to generate a peak reduced signal.

Regarding claim 5, Leva discloses the PAR reduction is used in an OFDM system (paragraph 0043).

Regarding claim 6, Leva discloses the DAC that converts the peak reduced signal to an analog signal prior to transmission (paragraph 0043).

Regarding claim 22, Leva discloses a communication device that modifies an input signal to reduce peak signals associated with the input signal. This is shown in figures 1-3 and paragraph 0011. A power amplifier will amplify the compensated signal (paragraph 0007) and the receiver is able to restore the original signal (paragraph 0011). Leva does not disclose shaping a modulation constellation of the input signal to reduce the peak values associated with the input signal. Tong discloses constellation shaping as shown in figure 5. Constellation shaping is a method of reducing the power required to transmit data relative to the power required for an unshaped constellation while keeping the minimum distance between constellation points the same (paragraphs 0054-0057). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the shaping components of Tong into the device of Leva to further reduce the power of the system. The shaping will be known in the receiver to recover the transmitted data.

Regarding claims 23 and 24, Tong discloses scaling the constellation (paragraph 0090).

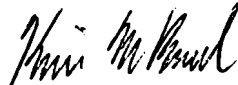
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd  
5/21/2007

  
**KEVIN BURD**  
**PRIMARY EXAMINER**